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ABSTRACT

In 1976 the National Institute of Education established the Research and Development Utilization (RDU) Program. This project was intended to apply research and development products to local school problems: to develop a problem-solving and product selection process usable by local schools and to organize a linkage system making national, state, and other external resources available to local school personnel. Seven projects serving over 300 school locations in 20 states were operated under the RDU program from 1976 to 1979. Preliminary findings from a study of the program suggested that engagement in RDU program activities would promote school improvement. Several variables were examined to determine which were important to the impact of the RDU program at the school level. Such variables included characteristics of the research and development products chosen, degree of modification of externally developed products, strategies selected for problem-solving, amount of coordination with outside experts, and techniques used during product implementation. These variables were found to be more powerful predictors of success at implementing innovations at the local school level than was school "readiness" as measured by previous experience with innovative efforts, federally funded programs, or use of externally developed research and development products.
(Author/PGD)

LINKING R&D WITH LOCAL SCHOOLS: IMPLICATIONS FOR SCHOOL ADMINISTRATORS FROM THE STUDY OF THE R&D UTILIZATION PROGRAM

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INTRODUCTION

In June of 1976, the National Institute of Education (NIE) established the Research and Development Utilization (RDU) program as a new action-research effort in dissemination. This program was designed to:

- apply R&D products, or ideas, to school problems;
- develop a problem-solving process, whereby schools would systematically identify such problems and select and implement new ideas; and
- organize a linkage system, whereby national, state, and other external resources would be made available to school personnel.

The RDU program is unusual among federally funded dissemination strategies because of its dual commitment to the dissemination and use of R&D products (curriculum innovations) and to the development of local school capabilities to solve problems through the use of externally generated knowledge. The core of the RDU strategy was to provide each participating site, which was either a school or a district, with assistance in the following sequence of activities:

- identification of a problem or set of problems;
- examination of alternative solutions to the problem, focusing particularly on the products of educational R&D;
- selection of a specific solution to address the problem;
- implementation of the solution;
- evaluation and incorporation of both the solution and the problem solving process.

The service delivery system of the RDU program operated through seven projects, each of which coordinated a network of organizations and individuals involved in the provision of services and information to local schools and school districts. As a whole, the seven projects operated in 20 states and served over 300 schools or school districts over a three-year period (1976-1979). Each of the projects selected and made available a pool of R&D products, which was also referred to as a knowledge base. These knowledge bases were developed as a resource for identifying solutions to match client school needs. The projects also deployed "linking agents" who coordinated the services provided to local schools and school districts, and who helped guide the local school personnel in a school improvement process.

In November 1977, Abt Associates Inc., a social science research firm based in Cambridge, Massachusetts, was contracted to conduct a study of the RDU program. While we have already produced a number of interim reports (Chabotar and Kell, 1978; Louis et al., 1979; Yin, Gwaltney and Louis, 1980; Spencer and Louis, 1979; Kell and Louis, 1980, Louis, 1980) we have only recently completed the data collection that will allow us to assess the impact of the RDU program on schools. Thus, the following discussion of findings and their implications for school administrators is necessarily preliminary and limited.*

PRELIMINARY FINDINGS ABOUT THE R&D UTILIZATION PROGRAM

Because a key feature of the program design was its equal emphasis upon the documentation of R&D products and upon the problem-solving process, the discussion of our preliminary findings will be divided accordingly.

Findings Related to the Applicability and Impact of R&D Products on Schools

One of the primary motivations for the development of the RDU program was to address critics of educational R&D who claimed that ten years of extensive funding had produced little of use to the educational community. One intent of the R&D Utilization Program, was therefore, to test whether schools could solve educational problems through the use of existing research and development based "products". Six projects that developed product pools were limited to products in either basic skills or career education, while one dealt exclusively with inservice education. In addition, all seven projects emphasized quality control over the product pool. The products were intended to show evidence of effectiveness and evidence of transportability from one site to another.

In general, RDU projects were able to provide acceptable, attractive products to almost all of the schools involved in the program. In only 20 percent of the cases did projects find it difficult to "match" a school's problem to a locally acceptable, but externally developed solution. Furthermore, the data indicate that the selected products were received with enthusiasm in most schools:

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*The final reports from this study will be available in the winter and spring of 1981. This analysis is based upon data collected through site visits to 80 schools and districts, and surveys of teachers and principals in 150 schools.

- A survey of teachers conducted several months after the end of the project indicates that approximately 80 percent of those who are eligible to use the product are, in fact, using it.
- In addition, approximately 50 percent of the surveyed teachers responded enthusiastically to questions about whether the product provided new ideas and whether it was directly relevant to the most pressing problems or needs in the school.
- Finally, principals report that a fair degree of product institutionalization has already occurred. Sixty-four percent, for example, indicate that the program or materials have been formally incorporated into school curriculum plans. Approximately 60 percent indicate that locally written guidelines for the use of materials and methods have already been developed or will definitely be developed in the near future. Sixty-two percent predict extensive use of the materials or methods by teachers in the future.

What characteristics of the product, if any, are related to the desired positive outcome or effects of the R&D Utilization program in schools? Based on Abt Associates' analysis of data from approximately 75 schools visited either by Abt Associates staff or case study writers employed by the seven projects, we have developed five preliminary outcome measures which reflect the overall objectives of the program. Three of these reflect the overall impact of the program on the school. These include:

- the scope of implementation, or the percentage of students and the percentage of the student day affected by the implementation of the product;
- institutionalization, (sustained use) of the process and product; and
- a scale of organizational change, tapping the amount of improvement in curriculum, materials, methods, structure teacher morale, and pupil performance that occurred as a result of the innovation.

Our analyses indicate that curriculum product characteristics are particularly strong predictors of the scope of implementation, of institutionalization, and of organizational change. The most important product characteristics are:

- whether or not there is any empirical evidence of the effectiveness of the product, in other words, whether the product is field tested or validated;

- whether the product is complex, [illegible]s, does it have many parts, and is it designed to change many aspects of the school's program at once?
- whether the product is designed to affect skills directly, in other words, whether it is related to the curriculum, rather than to administrative procedures in the schools, or to inservice.

One "non-finding" is also of significance. Our data do not provide support for an emphasis on the importance of developing materials locally. Variables which tapped local material development and the degree to which products underwent substantial local revisions do not effectively predict any of the RDU outcomes.

Implications of Preliminary Product Findings for School Administrators

In almost all of the cases that we studied, school administrators had a clear and decisive role in choosing the strategy for school improvement that is used by the school or district. Thus, he or she may decide whether a local improvement project will implement externally developed projects or will attempt to develop a new program using internal resources. Our data suggest that the school administrator should, in most cases, consider the use of externally developed products or practices (at least as a core for the change activity). This approach will, under most circumstances, deliver the greatest impact for lower costs.

In choosing an externally developed product, the school administrator should attend to the features of the product that are likely to maximize its impact upon the school. In this case, validation, or the existance of some empirical evidence of effectiveness, is an important criterion. Validation usually implies other important characteristics of the product: better packaging and more easily available materials, and more experienced trainers, who are available to provide assistance both before and after implementation at nominal costs. These factors were particularly important in obtaining teacher acceptance and enthusiasm about the curriculum innovations.

Administrators should also be aware that, if they wish to produce major school improvements, they must also pick products that are complex, require lots of change, and are difficult to implement. There is apparently no substitute for hard work in the innovation process and simple innovations just don't seem to make enough of an impact. In addition, administrators must remember that they have key roles to play in insuring that a new

curriculum product "sticks". We found that active administrative support was most critical in planning for continuation of the new practices by engaging in or supporting activities like:

- writing school or district-wide guidelines for how the practice should be incorporated;
- "selling" the program to the board or to upper level administrators;
- developing mechanisms for training new staff in the desired practices;
- ensuring appropriate levels of budgetary support.

Although these activities were critical, they are often overlooked.

Finally, the relative paucity of available validated innovations in a variety of areas of critical concern to schools suggests that school administrators should press federal and state agencies to fund more product development that is responsive to current school and district needs. Current federal priorities do not favor curriculum development, and there are no real mechanisms for "sensing" the pressing priorites of local educators. This will not change in the near future without support from school administrators for new policies.

Preliminary Findings about the Problem Solving Process

While teachers and administrators liked the new practices they adopted, in many cases the problem solving activities they engaged in were viewed as even more fruitful. Many schools viewed the RDU process as an opportunity for individual growth, or the development of a better understanding of the school, which led to more significant attempts to improve overall organizational functioning. The problem solving process in the R&D Utilization program was a relatively complex one which involved mustering both internal and external resources. Each of these will be discussed in turn.

Internal Strategies: In most cases, the "RDU approach" involved the development of an internal problem solving team, which received a mandate from the school and district to take responsibility for defining a problem, examining solutions, and planning for implementation, as well as monitoring and evaluating implementation in some cases. These teams typically included representatives of different role groups within the school--teachers, school based administrators, and central office administrators or specialists.

The problem solving process used in most RDU schools was quite different from their previous innovation practices. Innovations in schools, according to our respondents, are typically introduced because a principal or an individual in the district office becomes enchanted with a new practice, and it is imposed upon a school staff that is not equally enthusiastic. In the R&D Utilization program, in contrast, influence was centered at the teacher level, although the involvement of other role groups, including administrators, was also important. Thus, for example, if we look at the distribution of influence in selecting a new solution to the identified problem, we find that central office staff had a high level of influence in 24 percent of the sites, as did principals in 40 percent of the sites, as contrasted to 65 percent of the sites in which teachers also had a high level of influence. In addition, a survey of principals indicates that fewer than six percent believe the RDU approach to problem solving was not distinctly different from practices they had previously engaged in.

The function of the teams was to increase the level of effort and the quality of the problem solving process, (quality defined as adherence to a planning model of analyzing needs, matching solutions to those needs, and of careful planning for and monitoring of implementation). Our data indicate that positive school effects rarely occur without a high level of effort. The quality of the problem solving process, particularly the degree to which the process adheres to principles of sound decision making and plans, is also a strong predictor of organizational change, as is the influence of the local team over the decisions in the process.

Our data also suggest that changes in participation in problem solving, and particularly the involvement of teachers in the problem solving process, frequently had significant impacts on teacher morale, communication patterns within the school, and individual staff development.

Of special significance is the finding that broad involvement and influence of many role groups in the school is especially important at particular stages in the problem solving process--namely, when the innovation was selected, during planning for implementation and in monitoring the implementation activities. Broad based involvement is less important in the problem identification process, largely because there appears to be a consensus in most schools about a range of significant needs or problems.

External Strategies: In addition to the development of an internal teacher/administrator team with a broad mandate for decision making, the RDU process typically involved external actors, which included linking agents and trainers from the product developer or other sources. Linking agents varied enormously in the amount of time they were expected to commit to each of the schools they worked with, and the roles they were expected to perform. In some cases they were expected to serve only as a communications link between the project and the site, including communicating the projects' expectations about the type of problem solving activities that the site would engage in. In other projects they were expected to take strong change agent roles or to provide specialized consultant assistance in a curriculum area. The linking agent and his or her activities had a strong effect on product implementation and school change. Behaviors that seemed to have the greatest impact are:

- The amount of time that linking agents spent with client schools was extremely important as a predictor of RDU outcomes.
- The amount of influence that the linking agent had over client and team activities and decision making is critical. More active "change agent" roles helped schools to progress more rapidly, but did not usually undermine local ownership.
- The degree to which the linking agent adopted a facilitator or process role, which involved surfacing and resolving conflicts, providing training and problem solving in group process, and providing technical assistance in diagnosing the problem and assessing the match between innovations and solutions is a critical predictor. (Other roles which were less significant as predictors were acting as a curriculum area specialist, or simply a general support person.)

Linking agents had the most influence over the level of effort devoted to problem solving, the quality of the problem solving process, and the initial scope of implementation of the product.

While the role of the internal team is important--particularly in producing longer term organizational changes--these beneficial outcomes are most likely to occur with the assistance of an external catalyst. Our observations in 42 schools suggest that school staffs that were able to go through an effective problem solving sequence without the assistance of an external agent typically had very strong and commited indigenous leadership--something which busy administrators cannot always provide in every instance where it is needed.

Despite local recognition that an external linking agent was an important part of the process, only 54% indicated that they would use the services of an external linker in a further problem solving effort. Our site visits suggest that availability of linkers is the key reason for this response--the RDU linking roles were discontinued in most cases after the demise of federal funding, and principals did not know where to turn to find similar support.

Externally provided training of local staff was also critical to the implementation process. The more training that was provided, and the more relevant it was assessed to be by the participating teachers, the greater the likelihood that real and lasting change would take place. Site visit data suggests that one-shot training was generally less effective than a more comprehensive training program, which involved training from a variety of sources, with "refresher" training over the first year of implementation. In addition, as noted above, the design of training programs for orienting new teachers to the use of the innovation are key to continued school improvement.

Implications of Process Findings for School Administrators

Our findings suggest that teams can be an effective strategy in school improvement efforts. Shared decision making facilitates the achievement of school improvement objectives by spreading the feeling of project ownership; eliciting multiple perspectives, insights, and expertise; minimizing the effects of a priori assumptions; and focusing attention on objectives that might otherwise be neglected. Shared decision making also improves staff morale; it improves coordination, communication, and articulation within and across grade levels; and fosters staff development.

A number of factors can contribute to the effectiveness of a local action team. Among these, the most important are:

- representation on the team of both administrators and those who will be directly affected by the decisions, i.e., teachers;
- adequate preparation for team roles;
- strong and effective team leadership, usually from an administrator;
- collective deliberation and democratic decision making, particularly during later stages in the problem solving process;
- an active and supportive principal (or, if the principal is not actively involved, adequate communication with the principal);

- efforts to spread the feeling of project ownership to non-members;
- adherence to sound problem-solving practices.

A key factor in creating an effective team is the availability of some adequately compensated release time for team members. We have observed that a little release time will stimulate a lot of commitment from teachers. Districts should remember to include adequate release time budgets in any grant purposes that are written. In addition, if monies are very short, administrators should investigate alternative ways of releasing teachers while not disrupting the educational program (such as joint class projects, field trips, etc.).

In addition, the school administrator should, where possible, encourage the involvement of external linking agents or facilitators who can become involved in helping the school to achieve its change objectives. While these may be difficult to find, many intermediate education districts are beginning to encourage their staff members to engage in facilitator roles. In addition, a school may have access to a central office specialist who is eager to play this type of role within the district. While not strictly an external linking agent, a district office person often has the objectivity and the flexible schedule which can allow him/her to play these roles. Finally, the district should not overlook the availability of other resources, both from federally funded programs, and from some universities which may be encouraging community service and involvement. In selecting a "linking agent," the school administrator must remember that the key features of the role that were most helpful were:

- process expertise (not an individual who seeks to bring a "solution" to the district);
- interest in building a sustained relationship with the school, not simply a one-time consulting arrangement;
- willingness to become an active participant in the change process, if and when it is required.

If no individual can be found who meets these criteria, it may perhaps be best to "go it alone." Finally, the school administrator should remember that, while a linking agent can assist him or her in providing leadership to the change effort, the presence of an actively involved and supportive principal, and strong support from the district office are still required for the change activity to be a success.

Summary and Caveats

The results of our preliminary analysis suggest that the interventions that were part of the original RDU project design were largely effective. The underlying assumption that both the availability of high quality products, the development of an improved problem solving process inside the school, and the access to external technical assistance will promote school improvement is supported. In addition, the variables related to the RDU intervention are more powerful predictors of the success of the school improvement efforts in the sites served by RDU than is the school's initial "readiness," as measured by previous experience with innovative efforts, with federally funded programs, with using externally developed R&D products, etc.

It should be stressed, however, that these results are quite preliminary and have not been tested in our larger data base, which includes survey data from principals and teachers on a larger sample of RDU sites. A more significant limitation of the analysis presented here must be mentioned. The above discussion emphasizes a view of school change that is primarily "technological" in nature (House, 1980). RDU strategies are viewed as "inputs," and the success of the school change program is viewed as the "output." We wish to emphasize that our qualitative data suggest that this view is simplistic. In the real world of the school, much of the responsibility for the success of a change project is dependent not on factors that are predictable, or known at the beginning of the process, but which might be labeled "normal critical events." Among the most important and frequently occurring events were: turnover of key administrators both in the central office and in the school; strikes or prolonged contract negotiations; and reductions in force. It should be emphasized that critical events do not necessarily impede a school change effort--even strikes may have positive impacts by increasing the cohesiveness of the school. Whether effects of events are good or bad, however, their impact upon the problem solving process and its outcomes are as strong as the findings presented here. Thus, in our later analyses we will move beyond a simple "technological" perspective on the problem of school improvement, and begin to analyze how other political, structural and cultural characteristics of the school affect the outcomes of the change process.

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